KEYES 30A Current Sensor

ACS712ELC-30A

rev. 1.0

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Description

One of a fundamental requirement in a wide variety of applications including over-current protection circuits, battery chargers, switching mode power supplies, digital watt meters, and programmable current sources is Sensing and controlling current flow. The simplest techniques of sensing current is to place a small value resistance (also known as Shunt resistor) in between the load and the ground and measure the voltage drop across it, which in fact, is proportional

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to the current flowing through it. The ACS712 device is provided in a small package, and consists of a precise, low-offset, linear Hall sensor circuit with a copper conduction path located near the surface of the die. When current is applied through the copper conductor, a magnetic field is generated which is sensed by the built-in Hall element. The strength of the magnetic field is proportional to the magnitude of the current through the conduction path, providing a linear relationship between the output Hall voltage and input conduction current.

Specifications

- the module can measure positive and negative 30 amps, analog output 66 mV / A
- when no current is detected by the output voltage is VCC / 2
- PCB board size: 31 (mm) x13 (mm);
- Note: ACS712 Hall detection is based on the Hall detection , try to avoid th e magnetic field in case of the impact of this!

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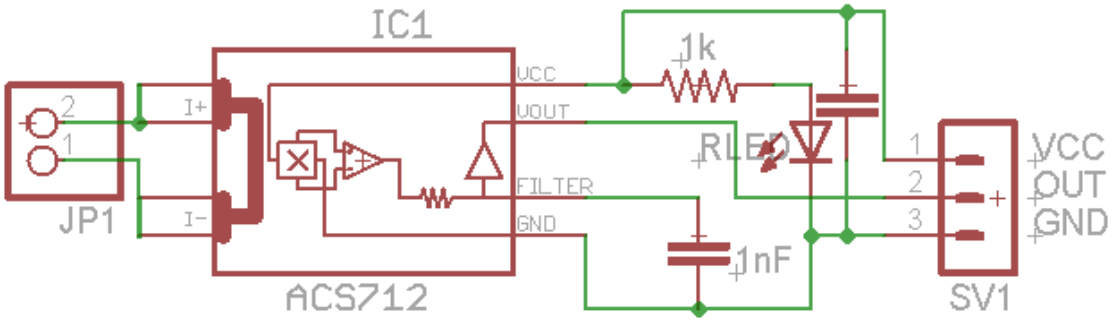
Pin Configuration

Schematic Diagram



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Sample Program

```
// Keyes 30A current sensor
#include <MovingAvarageFilter.h>
MovingAvarageFilter movingAvarageFilter(20);

void setup()
  {
    Serial.begin(9600);
  }

void loop()
  {
    // declare input and output variables
    int input = ((analogRead(A0)-511)/.017);
    // computation using two point equation
    // analogread = m(current) + 511
    // m = (1023-511)/(30000-0)
    int output = 0;
    int zero = 0;
    output = movingAvarageFilter.process(input);  // here we call the fir routine
    // with the input. The value 'fir' spits out is stored in the output variable.
    // moving average filter used to clean the output of the sensor

     if (output < 50 && output > -30) // due to sensitivity of sensor,
                                      //it must be filtered the initial value
       {
         Serial.print("Current (mA) = ");
         Serial.println(zero);
         delay (100); }
     else
       {
         Serial.print("Current (mA) = ");
         Serial.println(output); //
         delay (100);
       }
  }
```


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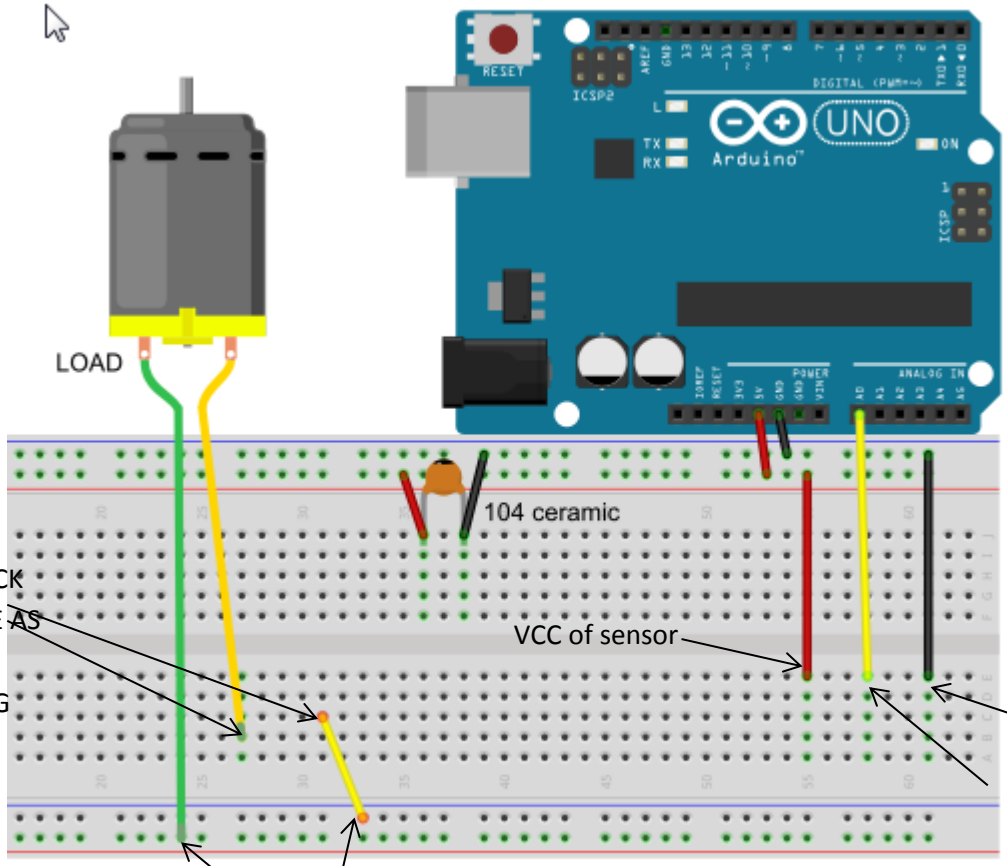
Wiring Diagram



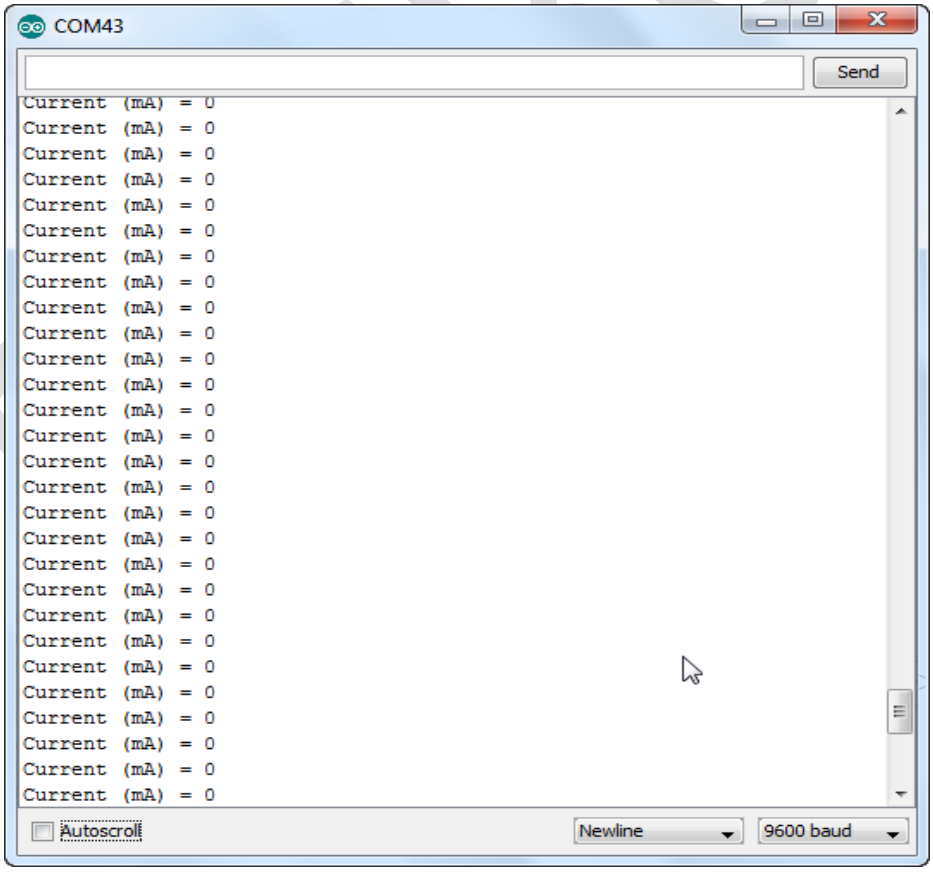
Testing

1. Please check all the connections from the given wiring diagram and download the library here: https://github.com/sebnil/Moving-Avarage-Filter--Arduino-Library-/archive/master.zip

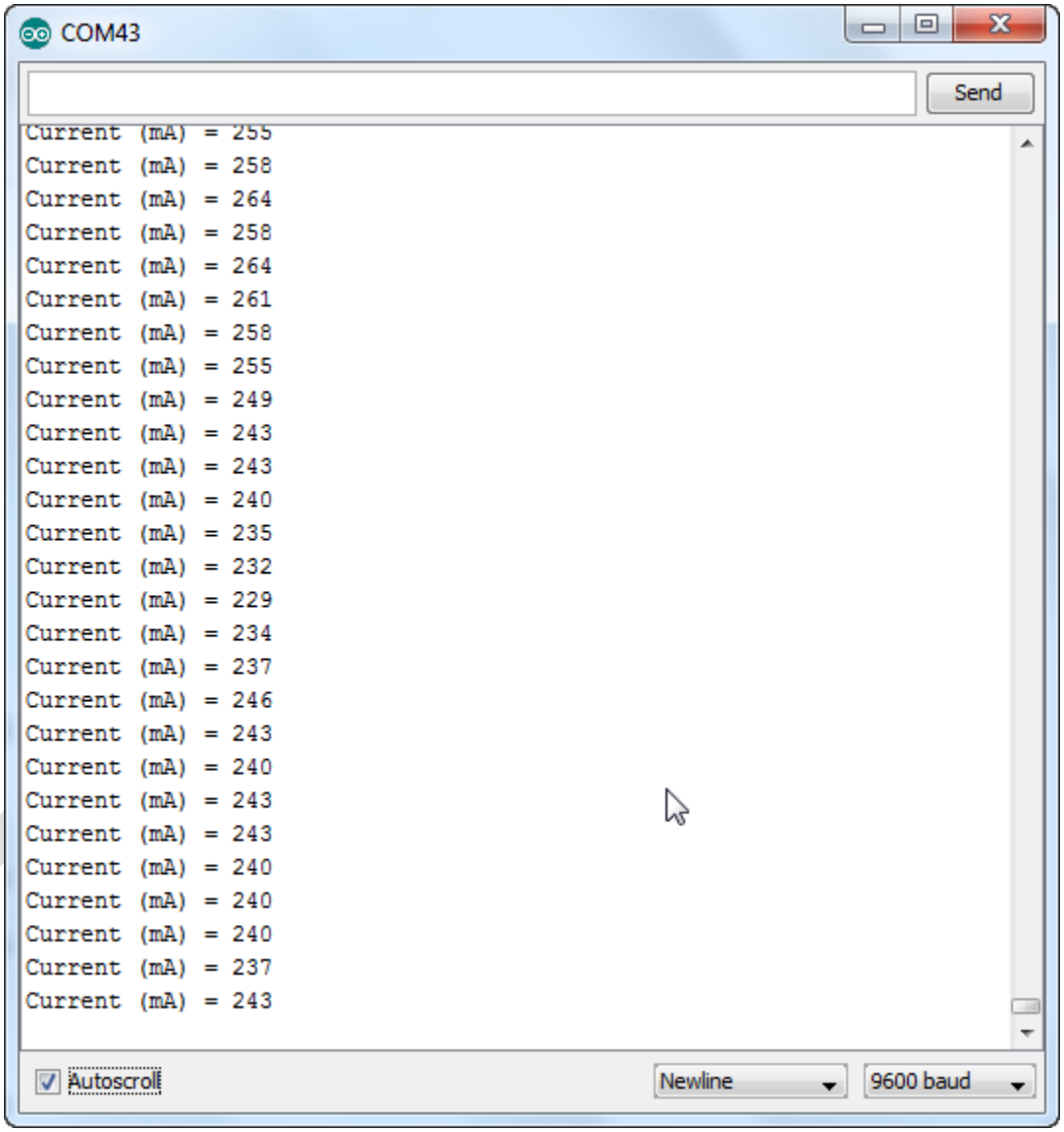
2. Type the sample program in your Arduino sketch then upload.

3. Open the serial monitor in the upper right corner.

4. When there is no load measured by the sensor or the motor is turn off, the output must be 0.



5. When the motor is turn on, there must be an output value that is not zero.

Note:

* There must be unstable output if you measuring mA due to sensitivity of 30A current sensor.